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HOUSEHOLD WEALTH: COMPARING MICRO AND MACRO DATA IN CANADA, ITALY AND UNITED STATES

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Abstract

The paper compares micro and macro data on the household sector's selected assets and liabilities in Canada, Italy and the United States. The macro data are from the Canadian System of National Accounts (CSNA), the Italian Financial Accounts (BIFA) and the US Flow of Funds Accounts (FFA). The survey-based estimates are obtained from the Survey of Financial Security (SFS), the Survey on Household Income and Wealth (SHIW) and the Survey on Consumer Finances (SCF), for the three countries respectively. The micro and macro data are reconciled as much as possible for sector coverage, conceptually equivalent financial instruments, and consistent valuation methods. Where possible, survey data are corrected for main sources of measurement errors, non-response and under-reporting. The aim of this paper is to provide an additional perspective on the quality of the macro and micro data sources by considering the coherence of the two sets of data. We also view the differences between the macro and micro estimates as a source of valuable information on possible measurement issues in both sets of data.

Contents

1. Introduction

The importance of household wealth for both micro and macroeconomic analysis is widely recognized among researchers. Wealth plays a central role in modeling aggregate consumption. Moreover, households' asset allocation strategies – the composition of their portfolios – are widely investigated in order to gauge insights on the observed responses to changes in key macroeconomic variables such as disposable income, interest rates, and stock prices. More recently, attention has focused on the composition and adequacy of accumulated wealth (saving) for retirement, associated with the aging of the post-war generation.

Thus, accurate measures of tangible and financial assets and liabilities of the household sector are crucial for analysis. The main source of such information on the aggregate household sector's balance sheets is time series data from the Canadian System of National Accounts (CSNA) for Canada, the Bank of Italy Financial Accounts (BIFA) for Italy, and the Federal Reserve Flow of Funds Accounts (FFA) for the United States. Data at the micro level come from the Survey of Financial Security (SFS) for Canada, the Survey on Household Income and Wealth (SHIW) for Italy, and the Survey of Consumer Finances (SCF) for the Unites States.

The aim of this paper is to provide an additional perspective on the quality of the two sources by considering the coherence of the two sets of data. Both the macro data and micro data have their strengths and weaknesses. For the macro data, estimates are derived as residuals for some financial instruments,[1] such as marketable securities. Also, one cannot assume that the survey-based estimates yield the true picture of household balance sheets. Aggregate point estimates of assets and liabilities that are generated from micro panel studies of individual households are subject to error, and, for a number of financial instruments, neither the macro nor micro estimates are a "true benchmark." Instead, one should view the differences between the macro and micro estimates as a source of valuable information on possible measurement issues in both sets of data.

For a selected list of financial assets and liabilities, we perform a detailed comparison of the aggregate time series (macro estimates) with the corresponding survey-based or micro estimates. A meaningful comparison between micro and macro data can only be performed when the two measures have been put on a conceptually equivalent basis. Both the micro and

[1] The degree of residual derivation in the household sector macro data varies among the three countries considered in this study.

macro estimates must be adjusted in order to reconcile them as completely as possible. Differences, such as the definition of the household sector, the coverage of financial instruments, and valuation methods between the two measures are, at least, acknowledged and, in some cases, resolved completely. Survey data for Italy are also further adjusted for non-response and under-reporting.

2. Sample surveys on household wealth and their respective measurement issues

This section briefly describes the characteristics of the household survey in each country and discusses some of the measurement issues that often arise in calculating population estimates from survey data. Two of the most critical measurement problems tend to stem from non-response and under-reporting in the survey data. Other measurement problems range from incorrectly estimated population weights to errors in data entry. The severity of the measurement problems depends on the sampling technique used to draw the survey households, the methodology employed to estimate the population weights, and the process used to collect the data from households.

2.1 Canada: Survey of Financial Security

In Canada, information on household wealth has been collected by a survey dedicated to this purpose – the Survey of Financial Security (SFS). It was last conducted by Statistics Canada in 1999 and will be repeated in 2005. Prior to 1999, six wealth surveys were conducted on an occasional basis, as a supplement to the Survey of Consumer Finances. The content of these surveys has grown over time, which has affected the comparability of these estimates. The 1999 SFS collected information on a range of social and demographic characteristics and on the income, assets and debts of the family unit. The range of assets and debts included in the survey is now quite comprehensive, incorporating even durables such as the contents of the home. For the first time in 1999, the wealth estimate also included the value of occupational pension plan benefits.

The sample size for the 1999 survey was approximately 23,000 dwellings, drawn from two sources. About 21,000 dwellings were selected from an area frame; the remaining 2,000, the "high-income" sample, were drawn from geographic areas in which a large proportion of the families had what was defined to be high income. The basic survey unit is the family unit, which includes both unattached individuals and economic families; the latter are defined as two or more persons who live in the same dwelling and are related by blood, marriage,

common-law or adoption. The institutional population is not included. Data are collected in personal interviews, by trained interviewers. Participation is voluntary and not remunerated. Despite this, the response to the 1999 survey was relatively high: 76%.

Every effort was made to minimize the impact of sampling and non-sampling errors when designing the SFS. The sample design was fairly complex. The main area sample was a stratified multi-stage sample selected from Statistics Canada's Labour Force Survey area frame. The smaller "high-income" sample was included to improve the coverage of the families with high net worth[2]. Two types of adjustments were applied to the basic survey weights to improve the reliability of the estimates, the first to compensate for non-response and the second to ensure that estimates of relevant population characteristics represented known population totals from external sources. Methods used to reduce the impact of non-sampling error included the use of experienced interviewers who were well–trained in both the subject matter and techniques for encouraging the co-operation of respondents, and the incorporation of edits to identify illogical or inconsistent responses. Respondents were encouraged to consult records as much as possible.

The aspects of non-sampling error that are most likely to have impacted on the survey results were non-response and underreporting. The response rate (76% overall) was much lower for the high-income sample (60%) than the area sample (77%). As indicated above, total non-response was handled by adjusting the basic survey weights for responding units to compensate for non-respondents. Weights were adjusted at the cluster level for the area sample and at the provincial level for the high-income sample. Partial non-response (which occurred when a respondent failed to completely answer one or more questions) was dealt with by imputing the missing information[3]. The impact of non-response is not known. Techniques for dealing with non-response assume non-respondents are similar to respondents[4].

The SFS did not adjust estimates for possible under-reporting, and its impact is not fully known. However, comparison of the survey estimates with macro estimates from the CSNA suggests that respondents underreported certain components of their financial assets

[2] For reasons associated with confidentiality of information at Statistics Canada it was not possible to select families based on their income. Therefore the high-income sample was selected from geographic areas having a high incidence of families with what was defined to be higher incomes.

[3] Where possible, missing information was imputed deterministically, using other information provided by the respondent. Otherwise, imputation involved identifying a record/respondent with similar characteristics.

[4] The information is not available to confirm to what extent that assumption is true.

and consumer debts[5].

2.2 Italy: Survey of Household Income and Wealth

The Survey of Household Income and Wealth (SHIW), conducted biannually by the Bank of Italy, aims at gathering information on household microeconomic behaviour. Detailed data have been collected continually for social and demographic characteristics of household members, their incomes and, since 1980, consumption expenditure. Estimates of households' tangible assets are also available from the outset, but holdings of financial assets have been surveyed only irregularly and are recorded on a regular basis since 1987. Their comparability over time is lessened by changes in the format of the questions.

Sample size is about 8,000 units per year representing about 21 million Italian households. The basic survey unit is the household, defined as a group of individuals sharing the same dwelling and pooling all or part of their incomes. Institutional population is not included. Data are collected in personal interviews through a CAPI (Computer-Assisted Personal Interviewing) technique, by professionally-trained interviewers. Participation is voluntary and not remunerated. As a result, non-response is high. After dropping units that are not found at the available addresses, in the last wave the overall response rate was about 34 per cent, while for the panel component it increases to 74 per cent. It is worth noting that in SHIW *item-non response* on most of variables (in particular on those relating household's wealth) is not accepted. As a consequence *unit non-response* tend to be higher than in other surveys, while *item non-response* is negligible.

Other major differences with other surveys, are that the SHIW does not over-sample the highest income individuals; moreover, published data are not corrected for under-reporting. For the sake of cross-country comparability (see table 4) the original weights in the SHIW have been corrected for non-response based on the probability of participating in the survey, using the method described in D'Alessio and Faiella (2002). The correction is based on the assumption that non-respondents are similar to those who are more difficult to contact (for example individuals that initially refused to be interviewed). The basic idea is that households with the higher probability of being non-respondents are under represented in the

[5] The reasons for this are uncertain. Some of it may be due to the fact that proxy reporting was permitted and the respondent family member may not have been fully aware of other members' finances. Other factors also come into play. Most respondents would be aware of the components of their income (because of the need to complete an income tax return each year) but not necessarily of their assets and debts. Also, because of the sensitivity of this type of information, it is possible that some respondents were reluctant to fully disclose their financial situation. The "high-income" sample size and lower response rate may have had an impact.

sample and, thus, their weight must be augmented. Moreover, population estimates of financial assets in the SHIW were also adjusted for under-reporting using the method developed by Cannari and D'Alessio (1993). The method is based on the integration of information available in the SHIW with that from an *ad-hoc* survey conducted in 1987 by the Italian commercial bank Banca Nazionale del Lavoro (BNL) on the financial asset choices of its customers. The correction involves a two-step procedure. First, for each household a participation probability of holding a given asset is estimated. Then, a fictitious ownership is attributed to those households which are not owners, but have a high probability of holding the asset. The second step corrects for under-reporting. This is accomplished by comparing the average amounts reported by BNL customers in the SHIW sample for each asset with those in the BNL survey, which are assumed to be more reliable. Finally, a measure of reticence is estimated and generalized to all other bank customers.

For data constraints, the experiment was only conducted for three macro categories, namely *deposits*, *government securities*, and *other assets.* Just for illustration purposes, the adjusted values for the third category have been split among its components (that is, mutual funds shares, corporate bonds, shares and other equity and foreign assets) applying the same composition of the unadjusted estimates. One should be cautious, therefore, when using the weights calculated for correcting the survey-based estimates for underreporting, since they reflect the composition of the household portfolio as it was in 1987.

2.3 United States: Survey of Consumer Finances

The Survey of Consumer Finances (SCF), conducted every three years by the Federal Reserve Board, is the most comprehensive survey on household wealth. Since 1989, individual households have been asked detailed questions regarding the current status of their tangible and financial assets and liabilities. Moreover, to provide more precise estimates of the highly skewed components of wealth, the SCF over-samples the highest income individuals and compensates for statistically high non-response rates among wealthy families by using data from tax files to adjust the sampling weights in the population estimates (Kennickell and Woodburn (1997), Kennickell (1999)).

The SCF selects households according to two sampling strategies. The majority of households are chosen via a standard multi-stage area-probability sample from among the continental United States. The response rate on the standard sample was 70 percent in the 1998 and 2001 SCFs. The remaining households are chosen from a sample of federal tax

returns using an algorithm to select a stratified sample that over-represents households more likely to be wealthy (Kennickell and McManus (1993), Kennickell (1999)). This procedure attempts to minimize the known biases found in wealth statistics derived from other surveys in the United States, such as the Survey of Income and Participation Program, the Panel Study of Income Dynamics, and the Consumer Expenditure Survey. The response rate on the tax-based sample in the 1998 and 2001 SCFs was about 30 percent with a much smaller 10 percent response rate for the wealthiest individuals. The SCF uses statistical methods to impute missing information on individual questions within the interview (Kennickell 2000). However, the SCF does not adjust estimates for possible under-reporting. Similar to Canada, a comparison of survey estimates with macro estimates indicates that respondents may under-report deposits and consumer debt.

Population estimates of assets and liabilities from the SCF are obtained in two steps. First, the individual household responses to the financial questions are weighted by the non-response-adjusted sampling weights. Second, these weighted responses are summed to form an aggregate estimate of the households' holdings of the asset or liability. Throughout the rest of the paper, these weighted sums are referred to as the U.S. micro estimates.

3. Reconciling concepts and definitions

To make the micro and macro figures comparable, a number of adjustments are necessary to both sources to account for differences in concepts and definitions. The adjustments attempt to address three main problems: (i) the inclusion of institutional units with special reference to non-corporate or quasi-corporate firms and non-profit institutions in the macro data, (ii) the different levels of detail of information between the two sources, and (iii) the different methods of valuing various assets and liabilities in the macro and micro data.

3.1 Definition of the Household Sector

The most crucial adjustments attempt to account for the broader inclusion of assets in the macro data reported for each of the three countries. Generally, the published macro estimates of household wealth include the net worth of sole proprietorships and partnerships, assets and liabilities of nonprofit institutions serving households, and assets in managed accounts, such as investment management accounts, personal trusts, and unit investment trusts.

3.1.1 Treatment of Businesses Owned by Households

As shown in table 1, household surveys in each of the three countries contain some information on business assets and liabilities (columns 2 and 3). In order to reconcile to the broader macro definition of the household sector, micro estimates from survey data were derived to comprise something equivalent to a "producer household" sector (i.e. consumer households and sole proprietorships and partnerships) for Italy and the United States. Canada's approach is more closely linked to that of a consumer household. The treatment of business assets in the reconciliation between the micro and macro estimates for each country is summarized below.

Canada

In the Canadian System of National Accounts (CSNA) National Balance Sheet Accounts (NBSA), households make up part of what is referred to as the Persons' and Unincorporated Business Sector (PUIB), which also includes non-profit institutions serving households. Unincorporated business covers partnerships and sole proprietorships (including farms), and these estimates are consolidated in the PUIB sector. By contrast, the SFS measures (net) equity in non-corporate business. For comparison purposes, PUIB net worth is adjusted by removing estimates of non-corporate business non-financial assets, liabilities (loans and accounts payable) and financial assets (largely, deposits); and, SFS equity in non-corporate business is similarly not considered.

Italy

The total financial net worth of informal partnerships, *de facto* partnerships, and sole proprietorships with up to five employees comprises the business part of the "producer household" financial account. Because the BIFA only publishes financial items, tangible or real assets of businesses are not included in the micro estimates. Also, in the macro data, it is not possible to separate the "producer household" unit into the business piece and the consumer household piece. By default, the financial assets and liabilities of the business are included in the directly-held financial assets and liabilities of the published aggregate household sector in BIFA. As a result, the micro estimates of directly-held financial assets and liabilities from SHIW were calculated to include amounts held or owed by consumer households as well as by informal partnerships, *de facto* partnerships, and sole proprietorships with up to five employees.

United States

Net worth or book equity of sole proprietorships, partnerships, and limited liability companies comprise the business part of the "producer household" balance sheet. Net worth is defined as the sum of tangible and financial assets less liabilities. In the FFA, sole proprietorships, partnerships, and limited liability companies are grouped into a separate noncorporate business sector. However, claims on the book equity of the noncorporate sector are recorded on the household sector balance sheet as "equity in noncorporate business." Thus, directly-held assets and liabilities of the aggregate household sector do not include those held or owed by noncorporate businesses. Consequently, the micro estimates from the SCF were calculated to include amounts held or owed by consumer households only. The micro estimate of "equity in noncorporate businesses" was calculated from the question regarding the sales value of the household's business.

3.1.2 Treatment of Institutional Assets in the Household Sector

As shown in table 1, aggregate estimates of household assets in all three countries include assets of nonprofit organizations (column 4) and various types of managed accounts (column 5). These institutional assets accounted for around 14 percent in Italy in 2002 and 12 percent in the United States in 2001. As a result, failure to adjust for institutional asset holdings would produce large discrepancies between the macro and micro estimates of directly-held household assets. In the reconciliation, estimates of the assets and liabilities of nonprofit institutions were deducted from the macro estimates in each country because information on nonprofits is not a part of the micro data surveys on households.

The reconciliation of the treatment of managed accounts between the macro and micro data is a bit more difficult. Managed accounts, in this context, are personal trusts and estates, investment management accounts, and unit investment trusts. For all three countries, assets of managed accounts are not reported separately in the aggregate household data.[6] As a result, assets in these accounts are contained in the transaction category in which the managed account places them.

In the case of Italy and the United States, the micro surveys inquire about the value of managed accounts, but do not provide detailed information on the composition of assets. For Italy, supplemental data on the portfolio composition of investment management accounts were used to allocate the micro total into specific asset categories. Thus, for Italy, the micro

[6] For the U.S., only assets of bank personal trusts are reported separately in the FFA.

estimates were adjusted to be more comparable to the macro estimates. For the United States, the solution is reversed. Aggregate estimates of investment management accounts and unit investment trusts were deducted from the macro estimates to make them more comparable to the directly-held micro estimates. For Canada the SFS covers all assets (including managed accounts), which puts in on the same basis as the CSNA.

3.2. Financial Assets and Liabilities Definitions

Table 2 provides a description of the financial assets and liabilities of the macro and micro measures in each country that can be put on a conceptually equivalent basis. The problems associated with this reconciliation were two-fold. Not only did each country have to try to make their own macro and micro estimates comparable, but we had to make the definitions of the assets and liabilities across countries line up as close as possible. Since both Italy and Canada follow the general classifications laid out in the System of National Accounts (SNA93), the United States adjusted its asset and liability measures to be as consistent as possible with the SNA93 definitions. Differences in definition across the countries are highlighted in bold in table 2.

Also, not every instrument was considered in the comparison, since, in some cases, it is not possible to derive a figure from both sources. For example, in all three countries currency was excluded because the micro surveys do not ask households how much cash is in their wallets or under their mattresses. For Italy, owner-occupied real estate, severance payments ("Trattamento di fine rapporto", TFR), loans from shareholders to cooperatives, and trade debits could not be compared because of data missing from either the SHIW or the BIFA. For the United States, assets in defined benefit pension plans, pension reserves at life insurance companies, consumer durable goods, and household holdings of commercial paper could not be compared between the FFA and SCF data. For Canada, life insurance assets are excluded, as are certain other assets (e.g., household loan assets).

3.3. Valuation Methods and Timing

Even after a careful reconciliation of concepts and definitions, discrepancies between the micro and macro estimates in each country can remain owing mainly to different methods of valuing the assets and liabilities and differences in the timing of the collection of the data in the macro/micro sources. Table 3 summarizes the valuation methods used for the selected financial instruments in each country's micro and macro data.

3.3.1 Valuation Issues for Canada

For Canada, valuation issues are not considered a major factor. SFS asks for market valuation (where applicable) throughout. Macro estimates measure marketable securities, investment fund units, and pension assets at market value[7]. Other financial instruments are measured at face value. Accrued interest is included with the instrument in some cases (deposits) and excluded in other cases (bonds). As a result, no adjustments are made for any unknown valuation differences between the micro and macro data estimates.

3.3.2 Valuation Issues for Italy

For Italy, financial instruments in the macro data are reported at market value or face value with accrued interest in accordance with the ESA95 Manual. For the most part, the Italian micro data valuations match up fairly well with that used in the macro data and only minor adjustments were necessary to place them on a comparable basis. However, two notable exceptions are for postal deposits and fixed-income securities, such as government and corporate bonds.

Post office savings certificates in Italy are actually similar to long-term bonds, but are classified within deposits in the macro data due to the lack of a secondary market. Consequently, there can be large differences between the face value reported in the micro data and the "market value" (which includes accrued interest) reported in the macro data of postal deposits. The macro estimates were adjusted to face value. This adjustment accounted for an average of about 30 percent of the difference between the macro and micro estimates.

The Italian macro data reports the market price of the fixed-income securities with accrued interest; whereas, the micro data is assumed to report face value. This difference in valuations could produce a wedge between the micro and macro estimates if interest rates changed substantially over the period. As a result, the macro data on fixed-income securities for Italy was adjusted to revalue the securities at face and exclude accrued interest to put them on a more comparable basis with the micro estimates. This valuation adjustment accounts for about 10 percent of the original difference between micro and macro estimates for Italian government securities.

3.3.3 Valuation Issues for the United States

As is the case for Canada and Italy, micro data valuations in the SCF match up fairly

[7] Non-financial assets are also estimated at current and/or market value.

well with that used in the macro data. The two exceptions are for mutual funds and shares and other equity. The macro data estimates for open-end mutual funds shares are a combination of the market value of equity share prices and book values of fixed-income securities; whereas the micro data estimates are solely market value. No attempt has been made to quantify how much of the discrepancy between the macro and micro estimates is due to this valuation difference. Certainly, this is an area to follow up on.

For shares and other equity, the macro estimates are a combination of market value of publicly-traded equities, an estimate of unlisted shares, and the book value of noncorporate equity (discussed above). The micro estimates are the market value of shares traded on public exchanges and the businesses owners' view of the amount they could sell their business for, which proxies for the value of privately-held corporate and noncorporate equity. Since it is reasonable to believe that business owners take into consideration the balance sheet of the firm when thinking of a sales price for their business, adjusting the macro or micro estimate for "bias" was not considered necessary.

3.3.4 Timing Issues

Differences in timing in the collection of the micro and macro data are likely to contribute to the discrepancy between the two measures, particularly for financial instruments that are recorded at market value. In both Canada and US, the household surveys are conducted over a period of time of the survey year. In Canada, the SFS was conducted in the spring (May-June) of 1999. In the United States, the SCF is conducted over the last six months of the survey year. Households generally respond with the market value of their financial instruments around that date. In the aggregate data, the market values are reported as of the end of the quarter. In Italy, a different approach is used. The survey is generally collected between February and September of the year following the survey year. Respondents are asked to report the stock of their household's wealth at the end of the preceding year.

The macro estimates reported in this paper for Canada and the United States attempt to account for this timing issue by averaging the quarterly aggregate estimates over the period the survey was taken. For example, if stock prices fell 20 percent by the end of the survey period, the aggregate estimates will show only a 10 percent decline. Essentially, this adjustment assumes that households are interviewed uniformly over the six month period. However, if households with large equity holdings are clustered more at the beginning or the

end of the survey period, then timing will contribute to the discrepancy between the macro and micro estimates. This issue is one potential area for further research. Information on interview dates, if available, could be used to help mitigate the timing problem, but this endeavor likely would require a substantial amount of work.

4. Household sector wealth: comparing micro and macro data

Institutional and program differences among the three countries, make it difficult to undertake a fully harmonized international comparison of micro-macro household data. Nevertheless, some interesting patterns emerge in the current exercise. Table 4 summarizes the results of the micro-macro comparison for each country by showing the percentage of the micro estimate relative to the macro estimate for each financial instrument. For example, perfectly aligned micro and macro estimates would have a figure of 100 percent. A figure below 100 percent indicates that the micro estimate is below the macro estimate, while a figure above 100 percent indicates that the micro estimate is higher than the macro estimate.

4.1. Canada

With only one time period to compare between the CSNA and SFS estimates, it is difficult to draw firm conclusions, and the cross-uses of the micro-macro data are limited. Nevertheless, the results of the cursory comparison were not unexpected and provide some additional perspective on household data.

Overall, the macro/micro measures of total assets line up fairly well for 1999. The micro estimates of total assets are lower than the macro estimates, measuring 89 percent macro estimates.

For financial assets, the results are mixed, with SFS amounting to 75 percent of CSNA assets. The micro estimates for household deposits are lower (72 percent of the macro estimates), with much of this difference likely attributable to differences in coverage that could not be adjusted for between the two sets of data. For example, SNA estimates measure total deposits of individuals (using deposit liability details of financial institutions), whereas the SFS is restricted to households (thus, excluding individuals in retirement residences, nursing homes, and other institutions).

Household holdings of debt securities, which amount to a relatively small share of households' total assets, are difficult to compare, as the SFS does not go into the same depth of detail as available in the macro estimates. Nevertheless, a cursory comparison reveals that

CSNA estimates are higher partly due to two factors: that SFS understates government savings bonds, and that there is a likely upward bias in a couple of the residually-derived CSNA financial instruments (corporate bonds and asset-backed securities).

Estimates of shareholdings and investment funds[8] (including foreign investments) are significantly higher in the CSNA data (micro data account for only 50 percent of the macro data). The gap is largest for equity holdings -- both listed and unlisted shares. This suggests that one issue is that high income respondents, where most of the equity assets are concentrated, may have been reluctant to completely disclose these types of assets. It also suggests that the approach used for the high-income sample may have been less than optimal.

The SFS emphasises individual and group pension assets of households. However, for purposes of this paper, the comparison is restricted to employer-sponsored pension assets. SFS and CSNA registered pension plan estimates are very close.

Overall, household non-financial assets compare more favourably than do financial assets. This is particularly true for residential real estate. SFS estimates of non-financial assets are larger than CSNA estimates (micro data amounting to 1.08 percent of the macro data).

CSNA estimates of household liabilities are larger than those of the SFS (micro data accounting for 72 percent of macro data). CSNA estimates measure debts of individuals using loan asset details of financial institutions. Micro data for mortgage debt compares reasonably well with the macro data, whereas the gap for (non-mortgage) consumer credit debt is considerably larger. In particular, this suggests that individuals may have been reluctant and/or unable to fully disclose certain types of non-secured liabilities (e.g. credit cards).

Overall, partially offsetting gaps in financial assets and liabilities between the micro and macro data produce an acceptable result when reconciling net worth between the two programs (SFS at 91 percent of the CSNA estimates). Further, reasonably consistent estimates for both real estate assets and mortgage debt are encouraging. A forthcoming SFS will allow for enhanced analysis and use of the micro and macro household wealth estimates in Canada.

4.2. Italy

The micro-macro comparison for Italy is developed first of all by looking at the ratio between unadjusted (i.e. taking into account only the sectoral, instrument and valuation reconciliation) micro estimates and macro estimates (table 4). Ratios adjusted for non-

[8] Currently, investment fund units are not released separately from corporate equity holdings in the macro data.

response and under-reporting are also presented to facilitate the comparison with the other countries. As already mentioned these calculations could be improved by the availability of more recent surveys such as that of BNL mentioned above. The comparison is performed on financial instruments only, since official macro figures for real wealth of Italian households are not available.

Adding up the various instruments considered, the SHIW estimate for total financial assets ranges from 31 (in 2002) to 36 (in 1998) of the macro analog. By looking at adjusted estimates a significant improvement is achieved, with micro data representing at least two thirds of the macro analog.[9]

The micro estimates for deposits ranges from 37 to 60 per cent of the macro figure if unadjusted data are considered; it ranges from 68 to 120 per cent if the correction for non-response and under-performing is considered.[10] The availability of direct information by sector (provided in the supervisory statistical reports to the Bank of Italy) implies that no estimation is needed to derive the household sector's holdings in the macro data. As a result, this is a case where BIFA data can be considered highly reliable and the aggregate source can be a good candidate for being used as a benchmark in assessing the quality of the survey-based estimate of deposits.[11]

For Italian government securities the correction for underreporting and non response has a significant impact on the ratio between micro and macro estimates: as an example, in 2002 this ratio increases from 31 to 100 per cent.[12] Nevertheless, it is important to stress that macro data on household holdings of government securities are partially estimated as a

[9] The evolution of total financial assets over the period of analysis is quite consistent: according to the survey-based estimates total financial assets increased by 70 percent over 1995-2002, close to the 78 percent rise in the BIFA. It has to be noted, though, that the similarity is mainly the result of opposite gaps that compensate each other: on the one side, in fact, the accumulation of mutual fund shares and life insurance reserves is stronger in the BIFA; on the other hand, deposits (both bank and post office) and, though to a lesser extent, foreign assets, increase much more according to the SHIW estimates.

[10] By looking at finer breakdowns for deposits (results not reported), the macro and unadjusted micro figures line up best for overnight deposits, differing by only 25 percent. For certificates of deposits and repos, the gap between the macro and micro estimates widens considerably, 75 percent and 90 percent, respectively.

[11] The share of deposits over total financial assets of the sector is much higher according to the BIFA than in SHIW estimates (43 versus 23 percent in 2002; unadjusted micro data). Similar results hold in 1998 and 2000, while in 1995 the figures match up quite well (35 percent in the BIFA and 31 in the SHIW). The gap is mainly due to the *bank deposits* component, given that the weight of *post office deposits* is not so dissimilar in the two sources (around 6 percent in 2002). The SHIW and BIFA estimates for *bank deposits* are much closer than those for *post office deposits* (the gaps are 30-35 percent and 60-70 percent, respectively, since 1998).

[12] In terms of asset allocation, BIFA and SHIW estimates are quite consistent, with the possible exception of the year 2000: the weight of government securities over total financial assets is about 30 percent in both sources in 1995, it then drops to about 13 percent in 1998, and then reaches the same value, i.e. 9 percent, in 2002. Among the various government securities, treasury bills (BOTs), that is, short-term securities, are the most consistent in the micro-macro comparison: in 1998 and 2002 the difference is only 8 and 6 percent, respectively.

residual: the stocks held by the household sector are estimated in the BIFA integrating data from supervisory statistical reports on securities deposited with banks for safekeeping, with the amounts which result by deducting from the amounts in circulation the holdings resulting for the sectors that have complete balance sheets. BIFA data on this asset category are therefore potentially subject to some bias and differences with the survey-based estimates should be judged cautiously.

Analogously to government securities, household holdings of corporate bonds (medium and long-term securities issued by firms, banks and other financial intermediaries) are partially estimated as residual in the BIFA. Differences with the SHIW figures remain considerable also when looking at adjusted ratios.[13]

Under-reporting shows to be important for mutual fund shares; if unadjusted figures are considered, the BIFA and the SHIW estimates are quite far apart in terms of values. On average, micro data account for less than 30 percent of the aggregate estimate.[14]

The BIFA estimates on households' holdings of mutual fund shares benefit from direct information on fund subscribers provided by fund management companies to the Bank of Italy for supervisory purposes. Hence, aggregate data on this financial asset category can be used as a benchmark in assessing the quality of the survey-based estimates.

Shares and other equity are derived as residuals in the BIFA, that is, the stocks held by households are obtained after subtracting from the total in circulation the quantities attributed to the other sectors. On average, over the four survey years considered, the unadjusted survey-based estimates account for approximately 23 percent of the aggregate figure, with 2002 showing the largest gap.[15] In the comparison, it should be considered that shares and other equity are mostly held by richer households, i.e. the ones having the smaller probability to be interviewed in the survey: according to the survey-based estimates, only 10 percent of households held listed shares and only 2 percent held unlisted shares and other equity. By

[13] According to the BIFA the weight of corporate bonds in households' total financial assets is twice than that in the SHIW estimates. In both sources, though, the relative importance of such instrument in the households' portfolio increases in time: corporate medium/long term securities, in the SHIW, increase from 2.5 percent of financial assets in 1995 to 6 percent in 2002. The corresponding BIFA estimates are 5.1 and 12.2 percent, respectively.

[14] The fraction of total gross financial wealth invested by households in mutual fund shares is similar in the two sources, moving apart only in 1998: it was close to 5 percent in 1995 and about 12 percent in 2002. The time pattern is also consistent: both in micro and macro estimates, holdings of mutual fund shares increases until 2000; it then decreases in the last survey year available. The magnitude of these movements, though, is fairly different and the 2002 figure is about 4 times the 1995 one in the SHIW and almost 5 in the BIFA.

[15] The share of financial wealth held in shares and other equity is higher in the aggregate data, with the difference widening over time: roughly, shares accounted for 12 and 17 percent of total financial assets in 1995 and 14 and 24 percent in 2002, in the SHIW and in the BIFA, respectively.

looking at micro data adjusted for non-response and under-reporting the ratio between micro and macro data increases significantly, but the difference remains large.

For foreign assets (i.e. financial instruments held by households and issued by non resident units) the gap between the micro and the macro sources is the largest among the financial asset categories considered and remains considerable also when adjusted micro figures are used. The aggregate used in the comparison includes government securities, medium and long-term bonds, shares and other equity, and other assets (mutual fund shares, deposits) issued by non residents. Differently from the corresponding instruments issued by residents, household holdings of foreign assets in the BIFA are not estimated as residuals, being mainly based on statistics by sector provided by the Italian Foreign Exchange Office (UIC).[16]

Net equity of households in life insurance and pension fund reserves is estimated in the BIFA by means of the statistics obtained from the annual accounts of insurance companies (Isvap) and pension funds (Covip). Italian Statistical Institute (Istat) data are also used.

As we already noted, due to lack of a suitable survey-based estimate, the amounts set aside by non-financial companies, monetary financial institutions, insurance corporations and households themselves for severance payments for their own employees (TFR) have been excluded from the analysis (that is, BIFA figures are netted out of that component).

The micro-macro discrepancy for life insurance and pension fund reserves widens over the survey-years analyzed. The ratio between micro and macro figures goes from 81 per cent in1995 to 38 per cent in 2002. The growth of these assets observed in the BIFA estimates is much bigger the in the SHIW data: with 1995 equaling 100, the 2002 amount is 365 in the aggregate data and only 169 in the survey-based estimates. It is important to stress that, for these assets, adjusted values are not available.

The weight of this category of financial assets in the two sources is fairly close in the last survey year (10.2 versus 12.6 percent), but is larger in the previous periods; in 1995

[16] Among the various categories of financial instruments issued abroad, securities (both government and corporate) generally represent a larger share of total foreign assets according to the SHIW (around 60-70 percent of total foreign assets in 1995, 1998 and 2002, versus the 30-40 percent weight in the BIFA). The gap is smaller in 2000, when in both sources foreign securities account for about 30 percent of foreign assets held by households.

The evolution over time of the stock of foreign assets is quite similar in the micro and in the aggregate figures; they increase from 1995 to 2000 and then decrease in the last survey year, when the difference with 1995 is +194 percent in the SHIW and +148 percent in the BIFA.

The weight of foreign assets in the household portfolios is unsurprisingly underestimated in the SHIW, just 0.5-1 percent versus 6-11 percent in the aggregate figures. Nevertheless, it is interesting to observe that the

reserves in life insurance and pension funds accounted for 5 percent of households' total financial assets according to the BIFA and for more than 12 percent according to the SHIW. This fact highlights the need of a more precise definition of the various financial instruments included in the category in the SHIW questionnaire.

As regards trade credits, micro and macro estimates could not be placed on a fully comparable basis; the SHIW figure is more comprehensive than the aggregate, not being limited to businesses with resident non-financial corporations, but comprising trade credits with all the clients (i.e. other households, general government, firms and so on).

The BIFA estimates of trade credits suffer from the fact that quasi-corporations data are not covered by the available sources (the Cerved company accounts archive); data for a large number of small companies that compile simplified annual balance sheets are also not available.[17] As a result, trade credits are the only category for which the survey-based figure is larger than (3 to 4 times as much as) the BIFA estimate.[18]

In the comparison of financial liabilities as estimated in the SHIW and in the BIFA, loans to households granted by other households have been deducted from the survey figures, since they are not recorded in the BIFA; the category we analyze, thus includes mortgages, bank loans and consumer credit. From the BIFA side, estimates are based on direct sector information available from the supervisory statistical reports; hence no residual approach is used in this case and the aggregate can be considered very reliable. Unfortunately, only the breakdown among short-term and long-term loans is available.

After the reconciliation for both the sector definition (the average share held by nonprofit institutions was about 3 percent) and the debt instruments comprised in the category, the micro-macro discrepancy remains sizeable. The micro estimates are approximately 45-50 percent of the corresponding aggregate series, with the ratio being quite constant across the survey-years. When adjusting for non-response no significant difference emerges. It is worth noting that, unfortunately, the adjustment for under-reporting is not

changes in time of the relative importance of foreign assets over total financial assets do match up very well (+100 percent from 1995 to 1998, +20 percent from 1998 to 2000, and -30 percent from 2000 to 2002).

[17] Since the number of companies for which information is not available is greater than 60 percent of the total of firms surveyed by Cerved, the lack of such information results in an underestimation of the aggregates, despite the small average size of the companies involved.

[18] The share of total financial assets in trade credits is nearly insignificant in the aggregate estimates (0.2 percent in 2002), while they account for approximately 3 percent in the survey-based data. They increase at a regular pace in the various editions of the SHIW considered, ending up with a 2002 amount that is two times the one recorded in 1995; in the BIFA, by contrast, they remain constant from 2000 to 2002, when the value is only 42 percent higher than in 1995.

available for liabilities.[19]

As a result of the differences in the estimates of the various assets and liabilities of the household sector, the micro and aggregate estimates of the households' net financial wealth (that is, total financial assets less total financial liabilities) are rather different: the unadjusted SHIW and the BIFA estimates in 2002 are, respectively, €617 billion and €2,106 billion (that means a 70 percent discrepancy).

4.3. United States

Overall, the macro/micro measures of total assets line up fairly well for the years 1995 and 1998. The micro estimates of total assets were a little lower than the macro estimates in 1995 and 1998, measuring at 94 percent and 97 percent respectively of the macro estimates. For 2001, the micro estimate is quite a bit higher at 119 percent of the macro estimate owing mainly to substantially larger micro estimates for government securities, mutual funds, shares and other equity, and owner-occupied real estate.

The micro estimates for deposits are consistently below those of the macro estimates, although the gap has closed substantially over the 1995 to 2001 period. However, much of the narrowing in the difference comes from a large decline in checkable deposits held by the household sector in the macro data, which does not show up in the survey estimates.

The wider discrepancy in checkable deposits may be related to the growing popularity of sweep accounts. Depository institutions will sweep funds in household checking accounts into money market deposit accounts overnight to reap the extra interest. The household, likely unaware that this is occurring, reports their checking account balance to the interviewer. Yet, when depositories file their quarter-end reports, checkable deposits may be reported less the amount swept. This problem is likely further exacerbated by the fact that all deposit accounts for the household sector in the macro data are estimated residually. Unlike Canada and Italy, depository institutions in the U.S. do not report deposits held by households directly. This is certainly a line of reasoning that we intend to explore further.

Another factor that may contribute to the lower micro estimates relative to the macro estimates for time and savings deposits may be under-reporting in the survey. Since the Italian

[19] Despite the significant discrepancies in the levels, the two sources describe very similar year-by-year dynamics for the amounts of households' debts. From 1995 to 2002, they increased by 64 percent according to the SHIW and 78 percent in the BIFA. Measured as a fraction of total financial assets, households' holdings of financial liabilities are not far apart in the two sources; in 2002, this share was about 18 percent according to the SHIW and almost 13 percent according to the BIFA estimates. Similar differences are observed in the previous survey years.

macro data essentially receives a benchmark on household deposits in the macro data, they can naturally do a "cross-validation" study on their micro estimates. As noted in work done by Cannari and D'Alessio, under-reporting of deposits in the SHIW in Italy is significant.

For government securities, the micro estimates are well below the macro estimates in 1995 and 1998, but in 2001 the micro estimate is substantially above the macro estimate. This reversal stems from a large increase in municipal securities in the micro data that is absent in the macro data. In years prior to 2001, the gap between the macro and micro estimates mainly owes to significantly higher macro estimates of U.S. federal government securities.

The micro estimates of mutual funds are consistently above those of the macro estimates over the 1995 to 2001 period. One possible explanation for this discrepancy is that households may include variable annuities in their responses to questions regarding their mutual fund holdings. Since variable annuities are invested in mutual funds, the household may "forget" this distinction and inadvertently include them in their responses. The macro data does not include variable annuities in mutual fund shares.

For shares and other equity, the macro and micro estimates line up almost perfectly in 1995 and 1998. However, in 2001, the micro estimate is quite a bit higher than the macro estimate. This divergence is a source of concern and has prompted us to re-examine the macro source data for possible errors. Also, the U.S. stock market was fairly volatile in 2001 and, certainly, the timing issues discussed above could have come into play.

Only assets in defined-contribution pension plans can be compared between the macro and micro data in the U.S. For these types of pension plans, the micro estimates are somewhat above the macro estimates. Some of the discrepancy may be a result of differences in valuation. In the macro data, the pension estimates have equities at market value and bonds at book value. Respondents in the survey, however, report the entire balance at market value. Because bond prices rose, reflecting the general decline in U.S. interest rates over the period, the market value of bonds in pension accounts would be higher than the book value.

For nonfinancial assets, only owner-occupied real estate can be compared consistently between the macro and micro data. The estimates are fairly close to one another with the micro estimate at 91 percent of the macro estimate in 1995, almost 99 percent in 1998, and 105 percent in 2001. The results show more pronounced growth in the value of residential real estate in the micro estimates between 1995 and 2001 than in the macro estimates, perhaps reflecting a surge in the value of high-priced homes. The SCF does not top-code the value of the household's primary residence; whereas, the primary source data for the macro estimates

is top-coded. Even though the macro estimate is adjusted for top-coding in the source data, the adjustment may not be sufficient.

The micro estimates of financial liabilities tend to be smaller than the macro estimates with the relative percentages at 88 percent in 1995, 95 percent in 1998, and 89 percent in 2001. The difference between the macro and micro estimates for liabilities is primarily due to the discrepancy between the two measures for non-mortgage consumer debt (line 17), which includes consumer credit, margin loans, bank loans, and insurance policy loans. The macro and micro estimates for mortgage debt align well for all three survey years.

Overall, the macro and micro estimates of net worth compare favorably, particularly in 1995 and 1998, measuring at 95 percent and 98 percent respectively. For 2001, the micro estimate is noticeably higher than the macro estimate and further investigation into the causes of the divergence is underway.

5. Robustness Checks

One pitfall in this type of comparative analysis is to view the difference between the macro and micro estimates as absolute. Rather, the point estimates from the macro and micro data sources each have standard errors associated with them. Consequently, the difference between the two point estimates has a standard error as well, and although the difference may seem "large" or "small" in an absolute sense, it may lie inside or outside a reasonable confidence band.

The actual calculation of a joint confidence interval from both the macro and micro side, however, is quite difficult. Italy and the United States were able to attack this issue from the micro side by calculating standard errors on the point estimates from the survey data to provide a statistical measure of the significance of the discrepancy. Table 5 shows how many standard deviations **the difference** between the micro and macro estimate is from the micro estimate for each country. A number under the absolute value of 2 implies that the difference between the macro and micro estimates lies within a 95 percent confidence band centered on the micro estimate.

Ideally, one also would like to have standard errors on the macro estimates. However, the complex structure of the macro financial accounts and the vast disparate sources that are used as inputs make calculating even the most simplistic standard error a daunting task.

5.1. Italy

As regards deposits the discrepancy between macro and micro figures tends to diminish in the more recent surveys and it is below 2 both in 1998 and 2002. Results are also satisfactory for government bonds. A separate figure for mutual fund shares, corporate bonds shares and other equity is not yet available; by considering all these instruments together, the calculations show that the difference tends to diminish in 1998 and then raises again; this is probably due to a valuation effect, that is particularly strong in the 1998-2000 period.

In the SHIW there are quality checks at different stages of the data production process[20]. The existence of measurement errors cannot be excluded anyway. For SHIW, the reliability of data on time-varying quantities was assessed with the Heise (1969) method (see Biancotti et *al.* 2004)[21] and reported in table 6.

The index for financial assets as a macro-aggregate is 0.68. Government securities appear to be measured better than deposits and other securities (respectively 0.74 against 0.38 and 0.64). Government bonds are perceived as not exposed to market fluctuations, since most holders do not sell them before their maturity date; in contrast to shares and mutual funds, respondents normally declare the face value of the bond, which is easy to remember. Deposits are measured with lower precision because their high degree of liquidity may induce memory problems.

The divergences between micro and macro data could also reflect potential problems in the macro data. On the BIFA side, input series for the household sector are mainly taken from the supervisory statistical reports to the Bank of Italy, which are subject to very strict quality checks; however, there are sources (e.g. the Cerved company accounts archive, collecting data for all the Italian corporations) on which exhaustive checks are not feasible; finally, some input data is estimated.

An experiment, results of which are to be taken as very preliminary, has been conducted on the BIFA to derive a measure of the published figures' stability among the different releases that can be interpreted as a proxy for the reliability of aggregate time series. The most stable aggregate series can be taken as "benchmarks" with a greater degree of

[20] A first quality check is made during the interview. Data collection is entrusted to specialised companies using professional interviewers. The questionnaire is made through a CAPI technique that help the interviewer to spot outliers or suspect cases. The interviewer can therefore ask to the respondent for clarifications. A second check is made by the company before sending data to the Bank of Italy. Finally, other consistency checks are directly made by the Bank.

[21] Provided there are at least three separate measurements of a variable on the same panel units (e.g. answers to the same question in three survey waves), under mild regularity conditions the method enables to separate real dynamics from measurement error (see Heise, 1969).

confidence for the comparison with the micro source. The analysis confirms that financial instruments whose estimate in the BIFA is based on direct information available in the supervisory statistical reports (deposits and, particularly, mutual fund shares and loans) are subject to very minor revisions (the average is 0.5 percent for the former and roughly zero for the latter). As a consequence, BIFA estimates on these asset categories could be easily used as a benchmark for the SHIW estimates.[22]

The main result of the qualitative analysis is that the valuation of shares and other equities probably represents for both sources the main problem to deal with. Therefore, at present, for those assets the comparison between micro and macro estimates must be interpreted with caution.

5.2. United States

For the net worth measure that is calculated in this paper, the macro estimate is less than one standard deviation from the micro estimate in 1995 and 1998, mainly owing to the statistically small differences in total assets (line 1) in 1995 and 1998 and home mortgages in 1998. For 2001, however, the macro estimate of net worth is 9 standard deviations below the micro estimate. As shown on the table, the macro estimates of mutual fund shares (line 5), shares and other equity (line 6), and owner-occupied real estate (line 8)—all of which carry a large weight in the household sector portfolio—are statistically below that of the micro estimate.

These types of divergences alert us to investigate potential problems in the macro data, particularly when categories in previous years have matched up well. For example, the difference between the macro and micro estimates of shares and other equity is statistically zero in 1995 and 1998. The difference between the macro and micro estimates for mutual fund shares has become statistically larger from 1995 to 2001. Also, the macro estimate for owner-occupied real estate is just outside the 95 percent confidence interval in 2001, after having been nearly "spot on" in 1998.

6. Summary

Comparing and reconciling micro and macro wealth estimates for households can be difficult, but quite useful for statistical and analytical purposes. Attempting cross-country

[22] Revisions increase in the case of the household holdings in which some residual estimation is employed; examples are securities and, to a larger extent, shares (particularly unquoted) and other equity.

comparisons, given program and institutional differences among countries, is an ambitious task. Therefore, the objective of this paper is quite modest; to provide an additional perspective on the quality of the two approaches, by summarizing efforts and results across three OECD countries – Canada, Italy and the U.S. This, in turn, provides (i) a basis by which to evaluate survey-statistical approaches, and (ii) a summary of the conceptual differences between micro and macro data. More importantly, it also provides a rough indicator of coherence as well as help identify areas where micro and macro fit (or do not fit) well with each other. It is difficult to draw solid conclusions from this first effort at international comparisons. However, a few general and specific points can be made.

Overall, it could be cautiously argued that the macro data and the household survey data are reasonably coherent. For Canada and the U.S., household net worth from the micro data is close to that derived from the macro data. Further, in each country, certain assets-liabilities series line up reasonably well between the household survey and the macro data.

Generally speaking, survey-based estimates of household assets and debt tend to be smaller in magnitude than those derived from macro data. In all three countries, macro sources produce higher household bank deposit assets that do survey data, prior to adjusting for under-reporting in the case of Italy. Household debt securities follow a similar pattern, except for government securities for the latest reconciled period for Italy and the U.S. In both Italy and Canada household survey-based estimates of corporate equities seem to lead to a significant understatement of assets when evaluated against the aggregate data. This would suggest that additional analysis of this gap and of possible statistical/data shortcomings is warranted. Pension assets tend to fit reasonably well, except for the most recent period in the case of the data for Italy. At the total debt level the micro survey data appears to lead to an underestimate of household liabilities. In Canada and in the U.S, this is largely attributable to non-mortgage loans (consumer credit). Given the importance of debt in the assessment of household's financial security, this gap would argue for further research.

It is clear that the various balance sheet items present different measurement challenges. An encouraging development was that, for Canada and the U.S., households' largest asset (residential real estate) and major liability (mortgage debt) reconciled reasonably well between the macro and micro sources. This alone suggests that both sets of estimates are measured with some degree of accuracy. More generally, the close relationship between the micro and macro sources for these two related balance sheet items may assist in the interpretation of measurement issues for other items.

Given the cursory findings of this paper, one recommendation for future work is to consider extending this reconciliation-comparison effort to include other countries, if possible.

Table 1

Reconciliation of the Defintion of the Household Sector

	Consumer households	Sole props. & partnerships		Non-profit organizations	Managed accounts
		Up to 5 employees	More than 5 employees		
	(1)	(2)	(3)	(4)	(5)
Canada					
Micro data (SFS)	✓	✓	✓		✓
Macro data (SNA)	✓	✓	✓	✓	✓
Reconciliation	✓				✓
Italy					
Micro data (SHIW)	✓	✓	✓		✓
Macro data (BIFA)	✓	✓		✓	✓
Reconciliation	✓	✓			✓
United States					
Micro data (SCF)	✓	✓	✓		✓
Macro data (FFA)	✓	✓	✓	✓	✓
Reconciliation	✓	✓	✓		

Table 2

Financial Assets and Liabilities Definitions

Financial instrument	Canada	Italy	United States
Bank deposits	Checking deposits, saving deposits (including term deposits)	**Overnight deposits**, saving deposits, certificates of deposits, **repos**.	Checking deposits, savings deposits, and certificates of deposit.
Post office deposits	Not applicable**.**	**Post-office current accounts, saving books, and saving certificates.**	Not applicable.
Total debt securities	Government and non-government short-term and long-term debt securities	Government and non-government short-term and long-term debt securities	Government and non-government short-term and long-term debt securities
Government securities	**Sufficient detail in the micro data does not exist to show this level of detail comparison.**	Treasury securities and other government securities.	Treasury securities, Agency- and GSE-backed securities and **mortgage pools**, U.S. govt. savings bonds, and **municipal securities**.
Corporate bonds	**Sufficient detail in the micro data does not exist to show this level of detail comparison.**	Medium and long-term securities issued by firms, banks and other financial intermediaries.	Medium and long-term securities issued by firms, banks and other financial intermediaries.
Mutual fund shares	**Included in shares (below), as this breakdown is currently unpublished in the macro data.**	Money market and non-money market fund shares issued by residents.	Money market and **open-end mutual fund shares**.
Shares and other equity	Includes listed shares, unlisted shares, **open-end funds**, closed end funds; also covers foreign assets.	Listed shares, unlisted shares, and other equity issued by residents. (?)	Listed shares, closed-end funds, **exchange-traded funds,** unlisted shares, and **equity in noncorporate business**.
Foreign assets (issued by non residents)	No data available to distinguish household holdings in the micro estimates.	**Government securities, corporate securities, shares and other equity, mutual fund shares, deposits abroad**.	No data available to distinguish household holdings in the macro estimates.
Net equity in life insurance and pension fund reserves	**Net equity of employer-sponsored pension plans only.**	**Sum of premiums and contributions paid and interest accrued on the accumulated capital, net of service charges for managing the policies or pension funds and benefits and other payments received.**	**Assets of private defined contribution pension plans and the Federal Employees Thrift Savings Plan**.
Trade credits	Not applicable**.**	**Trade credits (of producer households) with non-financial corporations, in the BIFA; with all customers, in the SHIW.**	Not applicable.
Liabilities (loans)	Mortgage and non-mortgage loans (consumer credit).	Mortgage and non-mortgage loans (**bank loans** and consumer credit).	Mortgage and non-mortgage loans (**bank loans** and consumer credit.

Table 3
Valuation of Household Sector Financial Instruments

Instruments	Micro Data	Macro Data
Deposits		
Canada	Face value (with accrued interest)	Face value (with accrued interest)
Italy	Face value	Face value (with accrued interest)
United States	Cash value	Cash value
Government securities		
Canada	Market price	Market price
Italy	Face value	Market price
United States	Book value	Book value
Bonds		
Canada	Market price	Market price
Italy	Face value	Market price
United States	Book value	Book value
Mutual funds		
Canada	Market price	Market price
Italy	Market price	Market price
United States	Market price	Market price and book value
Shares and other equity		
Canada	Market price	Market price
Italy	Market price	Market price
United States	Market price and non-corporate balance sheet net worth	"Market price"
Loans		
Canada	Face value	Face value
Italy	Face value	Face value
United States	Face value less pay-downs	Face value less pay-downs

Table 4

Comparison of Selected Assets and Liabilities of the Household Sector

(percentages of the micro estimate relative to the macro estimate for each country)

Financial instruments	1995				1998 / 1999[1]				2001 / 2002[2]			
	Canada	Italy		U.S.	Canada	Italy		U.S.	Canada	Italy		U.S.
		Unadjusted	Adjusted			Unadjusted	Adjusted			Unadjusted	Adjusted	
1. Total assets	**n.d.**	**n.d.**	**n.d.**	**n.d.**	**89.0**	**n.d.**	**n.d.**	**96.8**	**n.d.**	**n.d.**	**n.d.**	**118.9**
2. Total financial assets		**33.4**	**65.7**			**36.3**	**82.9**			**31.1**	**67.9**	
3. Deposits	n.d.	37.3	67.7	69.2	72.0	60.3	121.4	83.2	n.d.	57.4	119.5	93.6
4. Total debt securities	n.d.	30.9	74.9	57.7	67.0	31.5	77.6	52.6	n.d.	22.1	63.6	103.4
5. Government securities	n.a.	33.3	80.5	69.4	n.a.	42.2	96.2	66.5	n.a.	31.4	100.7	127.1
6. Corporate bonds	n.a.	16.5	41.9	22.4	n.a.	16.9	52.5	19.4	n.a.	15.4	36.7	36.3
7. Corporate equity and investment funds	n.d.	20.3	51.7	105.8	50.0	21.9	67.9	104.7	n.d.	18.1	43.3	125.8
8. Mutual fund shares	n.a.	34.1	86.6	129.3	n.a.	22.3	69.1	119.2	n.a.	28.3	67.6	142.8
9. Shares and other equity	n.a.	22.8	57.9	100.2	n.a.	29.2	90.7	100.5	n.a.	17.8	42.5	120.2
10. Foreign securities (issued by non residents)	n.a.	2.7	6.8	n.d.	n.a.	3.9	12.1	n.d.	n.a.	3.2	7.6	n.d.
11. Net equity in life ins. and pension funds	n.d.	81.1	n.d.	105.4	102.0	71.2	n.d.	108.1	n.d.	37.6	n.d.	113.9
12. Trade credits	n.a.	315..0	n.d.	n.a.	n.a	304.0	n.d.	n.a.	n.a.	443.1	n.d.	n.a.
13. Non-financial assets	n.d.	n.d.	n.d.	n.d.	108.0	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
14. Owner-occupied real estate	n.d.	n.d.	n.d.	91.3	n.d.	n.d.	n.d.	98.6	n.d.	n.d.	n.d.	104.6
15. Total liabilities (loans)	**n.d.**	**49.4**	**60.2**	**88.0**	**72.0**	**42.8**	**48.7**	**95.3**	**n.d.**	**44.0**	**47.8**	**89.2**
16. Home mortgages	n.d.	n.d.	n.d.	93.7	90.0	n.d.	n.d.	102.3	n.d.	n.d.	n.d.	98.1
17. Non-mortgage debt	n.d.	n.d.	n.d.	74.0	46.0	n.d.	n.d.	79.0	n.d.	n.d.	n.d.	68.0
18. Net worth[3]	n.d.	n.d.	n.d.	**94.8**	**91.0**	n.d.	n.d.	**97.9**	n.d.	n.d.	n.d.	**120.8**

n.d. – no data. n.a. . – not applicable.

[1] Italy and U.S. data are for 1998. Canada data are for 1999.

[2] U.S. data are for 2001. Italy data are for 2002.

[3] This measure of net worth only includes those assets and liabilities that are comparable between the macro and micro data sources and will not necessarily match that published in the official statistical reports.

Table 5

Difference Between Selected Macro and Micro Estimate

(Number of micro estimates' standard deviations)

Financial instruments	1995		1998		2001 / 2002[1]	
	Italy	U.S.	Italy	U.S.	Italy	U.S.
1. Total Assets	**n.d.**	**0.2**	**n.d.**	**0.5**	**n.d.**	**-7.6**
2. Deposits	6.5	10.4	1.5	4.7	1.2	2.3
3. Government securities	2.2	6.1	0.3	8.5	0.0	-3.1
4. Corporate bonds		14.5		23.6		13.1
5. Mutual fund shares		-2.3		-3.1		-9.7
6. Shares and other equity	2.3[2]	0.0	0.6[2]	-0.1	5.3[2]	-6.4
7. Net equity in life ins. and pension funds.	n.d.	-0.8	n.d.	1.2	n.d.	-2.3
8. Owner-occupied real estate	n.d.	3.9	n.d.	0.5	n.d.	-2.5
9. Total liabilities	**8.0**	**4.4**	**12.9**	**1.3**	**15.7**	**5.7**
10. Home mortgages	n.d.	2.2	n.d.	-0.6	n.d.	0.9
11. Non-mortgage debt		7.7		5.3		14.2
12. Net worth	**n.d.**	**0.7**	**n.d.**	**0.4**	**n.d.**	**-9.1**

n.d. – no data.

[1] U.S. data are for 2001. Italy data are for 2002.
[2] Data are for corporate bonds, mutual fund shares, shares, and other equity.
[3] This measure of net worth only includes those assets and liabilities that are comparable between the macro and micro data sources and will not necessarily match that published in the official statistical reports.

Table 6

Heise reliability index of Italy for the main survey

Wealth components	1989-1991-1993	1995-1998-2000
Financial assets	0.85	0.68
Bank and postal deposits	0.50	0.38
Government securities	0.99	0.74
Other securities (shares, bonds, mutual funds, ..)	0.74	0.64
Financial liabilities	0.59	0.54

Source: Biancotti, D'Alessio, Neri (2004).

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